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only to synonyms, but to related terms, and for most of the new terms which have appeared in connection with analytic work the author's name and the year, or in some cases the full bibliographic reference is given. In addition to this for many of the more important terms the subject-matter consists not simply of a definition, but of a short article of cyclopedic character. For example, under "Correlation" there are two pages of definitions, analysis, references, etc., under "Erbformel" one page, under "Experiment" almost five pages, under "Faktor" two pages, under "Heteromorphose" more than two pages. "Potenz" has nearly two pages, "Regeneration" nearly three pages, "Reiz" with compounds and adjective terms six pages, "Vererbung" five pages, etc. Each definition or article is signed with the initial of its writer.

Many terms consisting of substantive and adjective and a considerable number which consist of several words are included, *e. g.*, "advective Bildungen" "erbgleiche Bastarde," "funktionelle Hypertrophie," "ontogenetisches Causalgesetz," "correlative Variabilität," "Gesetz der Concordanz der Zellteilung," "Lage der Teile im Ei und Embryo," "Lysintheorie der Entwicklungserregung." The alphabetic arrangement of such terms in the book does not follow any invariable rule, but is determined by the most characteristic word.

Every student of "developmental mechanics" is familiar with Professor Roux's pioneer work in the development of an analytic terminology as well as in analytic investigation, and it is of course to be expected that no inconsiderable portion of the book is devoted to the terms of which he is the author.

In general the book has a distinctly morphological cast, as might be expected from its title and its authors, but a considerable number of strictly physiological and some physical and chemical terms are briefly defined. It seems possible that in an eventual second edition some expansion along these lines may perhaps be desirable.

The following quotation from the preface suggests how the book may be used not merely

for reference, but as an introduction to the subject:

Wer diese Terminologie zu seiner Einführung in die Entwicklungsmechanik verwenden will, dem ist zu empfehlen, der Reihe nach mit der Lektüre der Artikel: Entwicklung, Entwicklungsmechanik, Analyse, Differenzierung, Faktoren, Determination, Autoergie, Potenz, Lebewesen, Funktionen, Wachstum, Anpassung, Perioden, Experiment zu beginnen und die in jedem Artikel befindlichen Verweisungen zu benutzen.

The publishers, the firm of Wilhelm Engelmann in Leipzig, have done their part in the manner to be expected of them: the book is convenient in form and size, the type is sufficiently large for perfect ease in reading and the typographic work is of the highest grade. In a rather extended examination of the book the reviewer has not noted a single typographical error.

There can be no doubt of the value of the book. It should be of great assistance to clearness of thought and expression and should decrease the number of new terms which have no excuse for existence except their authors' ignorance of terms already existing. It is to be hoped that the book may be widely used by experimental zoologists in this country as well as in Germany.

C. M. C.

Handbook of Nature Study. By ANNA BOTS-FORD COMSTOCK. Comstock Publishing Co., Ithaca, N. Y. 1912. Pp. xvii + 938, many illustrations, mostly from photographs.

Wherever else the nature-study enthusiasm may have subsided, it has not at Cornell nor in New York. The principal reason for this steadfastness is the presence and work at Cornell of Mrs. Comstock. She has had loyal support from Professor Bailey, and effective helpers in a half-dozen assistants and associates, but she it is who has been, and is, the burning center of the Cornell nature-study illumination.

To make the rays reach farther Mrs. Comstock has for twenty years issued the well-known informing leaflets of the Home Nature-Study Course, which have gone to thousands of teachers and homes in New York. To make

the Cornell light shine farther still Mrs. Comstock now issues this monumental handbook, which is so full of meat for nature-study teachers that it almost requires both hands to lift it. A thousand clay-coated pages are too many and too heavy for one volume. The book is already being brought out in two-volume form, animal study filling one volume, and plant and earth and sky study making up the second.

There is an amazing amount of information, very well digested and arranged, about animal and plant life and earth and sky, in the book. It is an encyclopedia for the nature-study teacher, and it is at the same time a manual of nature-study practise. It contains the facts and, also, precise directions for using them in the most approved way; most approved, that is, by the actual experience, during the last fifteen years, of Mrs. Comstock, her associates, and the many teachers who have been under her eyes in New York.

The book is prepared, confessedly, to meet the general condition of untrainedness in nature study on the part of school teachers. This lack of training includes a lack of knowledge of nature, and hence a lack of knowing what there is to see. Mrs. Comstock's book has for each of its subjects, a "teacher's story" which tells facts, and then a "lesson," based on these facts, for the teacher to use with the children. The lesson includes a "leading thought" which determines the special observations called for, a note on the special "methods" to use for the particular lesson, and then a set of "observations" put in question form. In each lesson, too, there are book references for the teacher to make use of, if desired, and usually a bit of quoted verse or prose from some writer who has, of his own initiative had a lesson in seeing, enjoying and loving nature, from the special subject in hand. There are, too, hosts of pictures, most of them very attractive ones made from photographs of live plants and animals, and there is a detailed table of contents, extensive list of books for reference, and a full index. The book is altogether practically made.

Where nature study has weakened Mrs.

Comstock's "Handbook" should help it; where it has not yet taken root at all, the "Handbook" should go far toward giving it a beginning. For teachers and parents it should be *the* book of American nature study.

V. L. K.

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JONGMAN'S PALAEOBOTANISCH LITERATUR¹

THE third volume of Jongman's paleobotanical year-book has just been received in this country. It covers the years 1910 and 1911 and includes such titles as were omitted in the enumeration for 1908 and 1909. The arrangement is the same as in the two previous volumes, that is to say, the book is divided into two parts. The first part is a bibliography arranged chronologically by authors, each author's contributions being numbered, starting with number one for the first contribution in 1908 or subsequently. The second part, comprising pages 41 to 569, consists of a complete analysis of the literature listed in Part 1, and like it arranged alphabetically.

The real usefulness of a work of this kind depends entirely upon the skill and thoroughness with which the literature is digested, and in this respect Jongman's work seems to the writer to be of a much higher grade than that of comparable bibliographic undertakings. All old as well as new species discussed during the year are included, as well as all geological horizons, anatomical, morphological and phylogenetic contributions; all living species with which fossil species are compared, as well as purely botanical studies of such living forms as promise to shed light on fossil forms.

The work in short is exceedingly useful and botanists and paleobotanists are under a heavy debt of gratitude for the manner in which Dr. Jongman carries through this exceedingly laborious task. It is to be hoped that it will furnish the inspiration to some one to undertake a similar work for paleozoology.

¹"Die Palaeobotanisch Literatur," Dritter Band, Die Erscheinungen der Jahre 1910 und 1911 und Nachträge für 1909, Fischer, Jena, 1913, 570 pages.